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LM 2100 Payload Accommodation

INTRODUCTION

Lockheed Martin Space encourages payload providers and mission planners to create missions optimized for—or at least compatible with—our versatile and highly capable LM 2100 geosynchronous-orbiting (GEO) platform. The table below provides a summary of typical interfaces and performance capabilities provided by the LM 2100 platform. These specifications serve only as a guide to those interested in flying on this bus. An actual compatibility assessment is best done through an exchange of detailed information and interface requirements. In many cases, specific interface adaptations can be easily created.

Likewise, Figures 1 and 2 provide notional examples of payloads and where they might be accommodated on an LM 2100-based satellite. Figures 3 and 4 provide specific definition of the volumes available for payload mounting based on typical launch vehicle fairing constraints.

Table 1. LM 2100 Hosted Payload Accommodation

Typical[1] Payload Resource Allocations, Performance Characteristics and Interface Requirements	
Nominal Payload Resource Allocations	
Payload Mass Limit	1000 kg
Payload Power	12000 W
Payload Thermal Dissipation	6000 W
Payload Volume (contiguous)	3.5 m^3
Key Platform Performance Characteristics	
Attitude Control (Including Stationkeeping Maneuvers)	
Attitude Control System	3-axis stabilized, zero momentum bias
Pointing Knowledge, 3σ	0.02° Roll/Yaw/Pitch
Total Pointing Accuracy, 3σ	0.10° Roll/Yaw/Pitch (optional 0.03° per axis)
Acceleration Environment (Jitter)	<20 milli-g with optional vibration isolation
Mission Parameters	
Orbit	GEO: 35786 km circular, longitude/inclination maintained ± 0.05°
Duration	15 years
Probability of Success	>0.80 for 15 year mission
Nominal Program Schedule	18-36 mo
Key Platform Interface Characteristics	
Command and Data Handling Interfaces	
Main Data bus Alternate Serial Bus Interface Pulse Commands Telemetry Types available Payload Downlink	MIL-STD-1553B data bus RS-422 derived bi-directional serial bus -32 V, 28V Active analog, passive analog, discrete, serial (bidirectional serial bus), serial (1553), software 16 Bit / 32 Bit words, and memory dumps No specific constraints. Data rates 10 kbps to 100 Mbps and above are readily accommodated.
Power	
Main Bus Voltage (Standard)	70 V Regulated to 68 V to 71 V
Secondary Bus Voltage (Optional)	28 V Regulated to ± 2V
Vibration	
Standard Component Random Vibration Environment	0.2 G^2/Hz 20-1000 Hz -6 dB/Oct 1000-2000 Hz
Standard Component Sine Vibration Environment	0.5" D.A. 10-24 Hz 15.0 G 24-35 Hz 20.0 G 36-55 Hz 7.0 G 56-100 Hz
Thermal	
Internal Temperature Environments	In-Orbit Temperature Range -24°C and +61°C
	Transfer Orbit Temperature Range -24°C and +30°C
Component Thermal Design Criteria	Maximum average baseplate temperature 45°C; ±15°C max diurnal swing.
Reliability / Survivability / Electromagnetic Compatibility	
Radiation Tolerance	20-100 kRad(Si) Total Dose
Single Event Effects	<1 critical upset per box per 1000 yr
Payload Module Shielding Effectiveness	>20 dB (200 MHz to 40 GHz)
1. The LM 2100 is a scalable platform with enhancements for unique scientific, communications and other payloads available as options.	

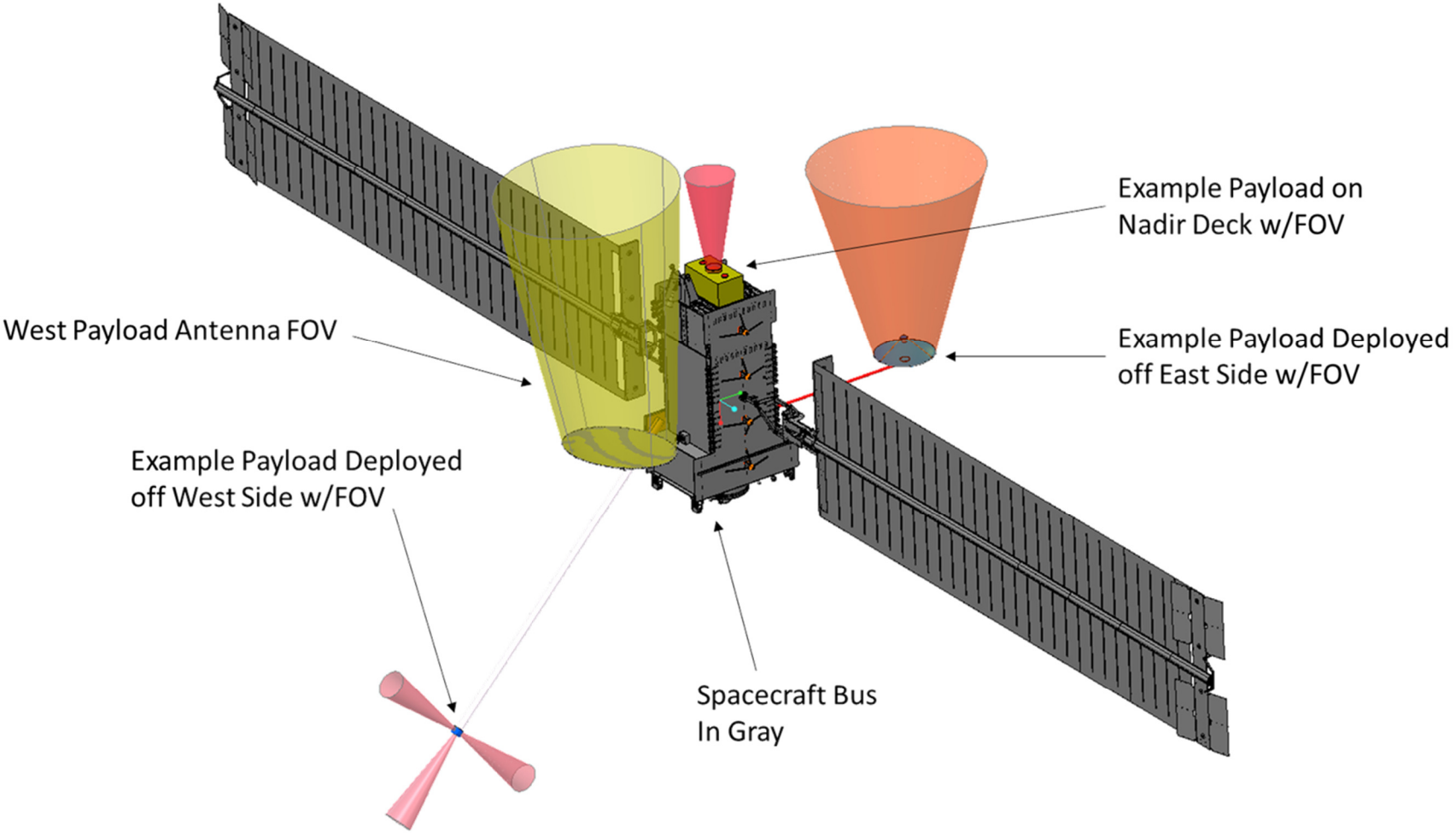

Figure 1. External view of typical LM 2100 showing a variety of potential payload mounting locations

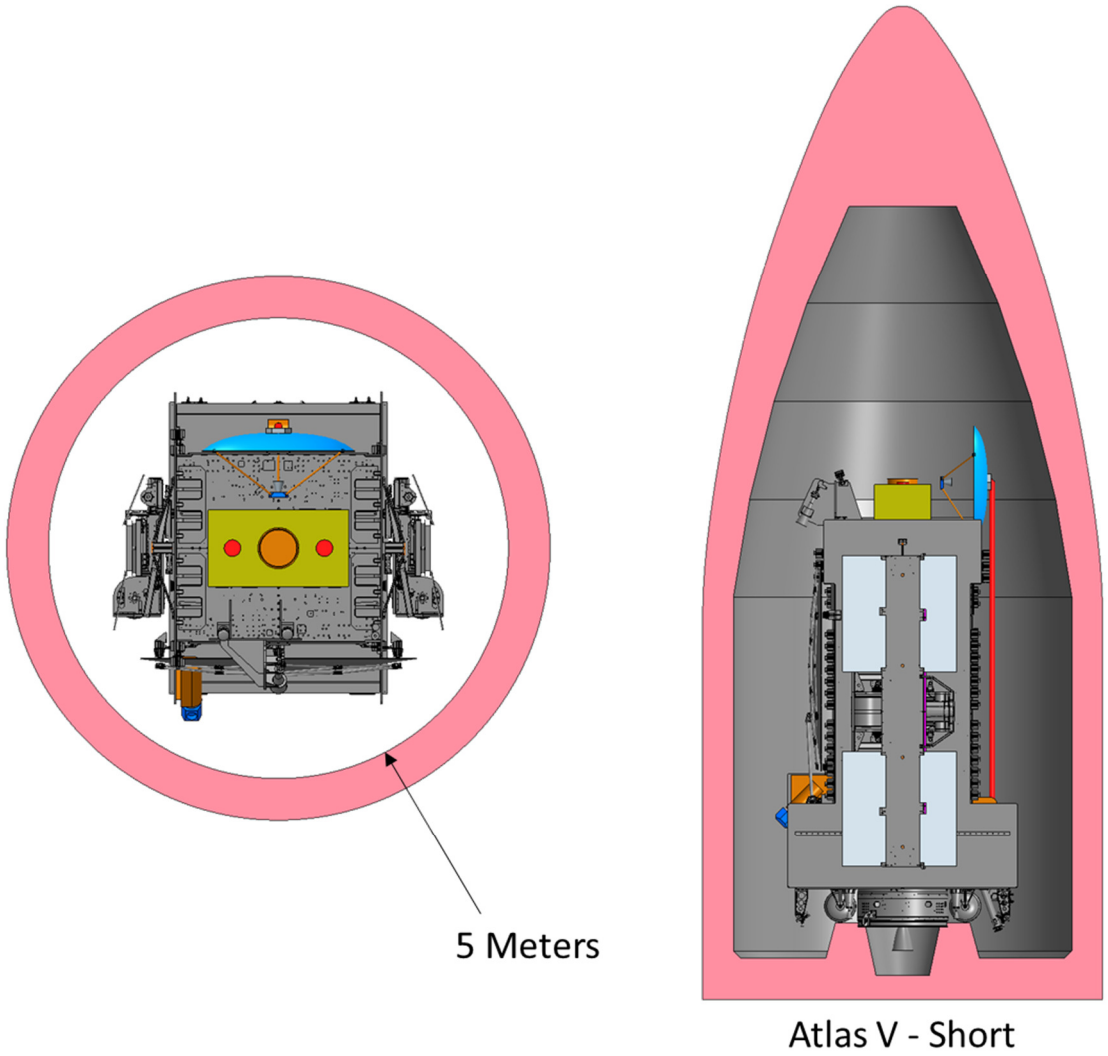

Figure 2. Typical LM 2100 showing size constraints when mounted in typical launch vehicle fairings. Falcon 9 also available

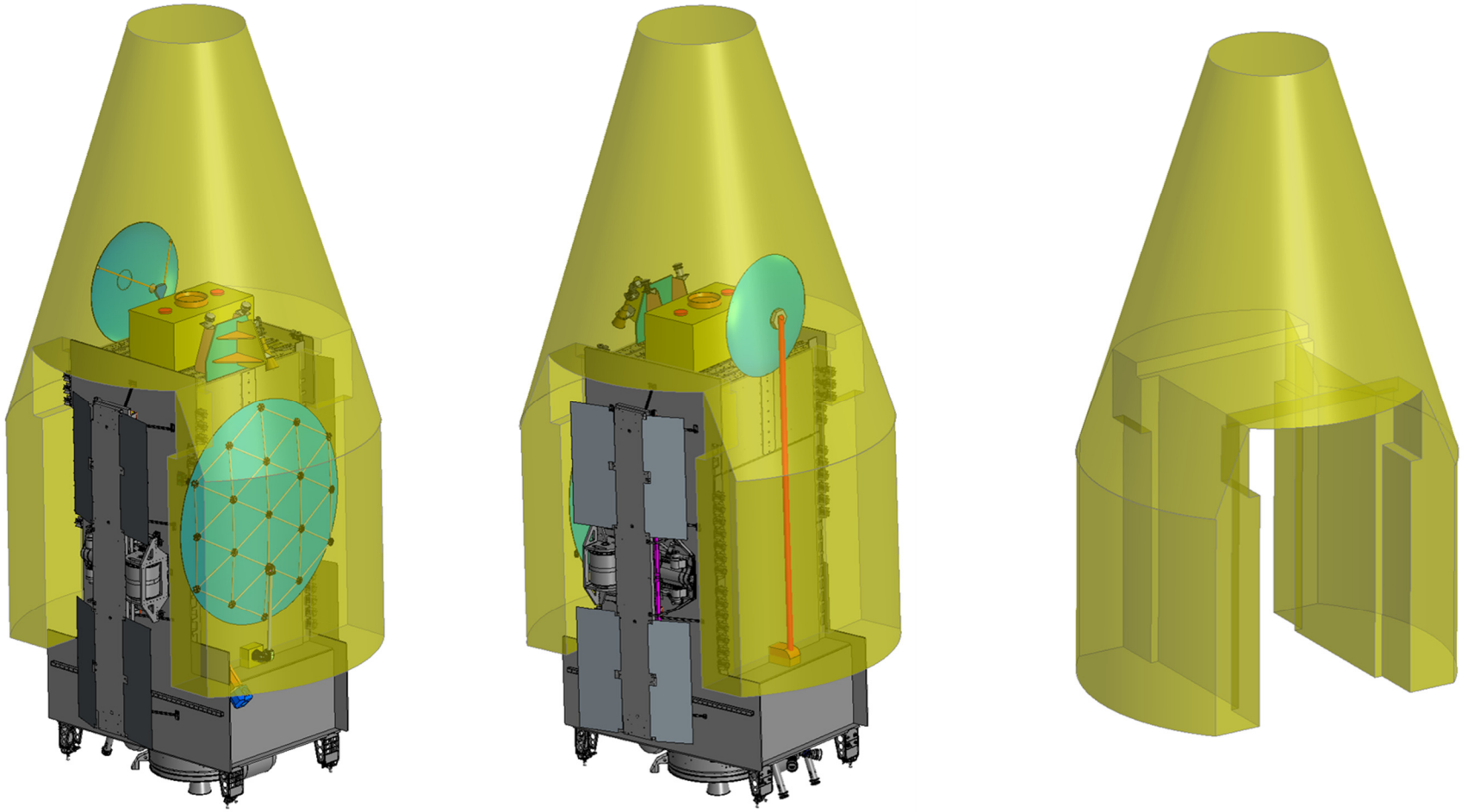

Figure 3. Volume available for payload mounting on LM 2100

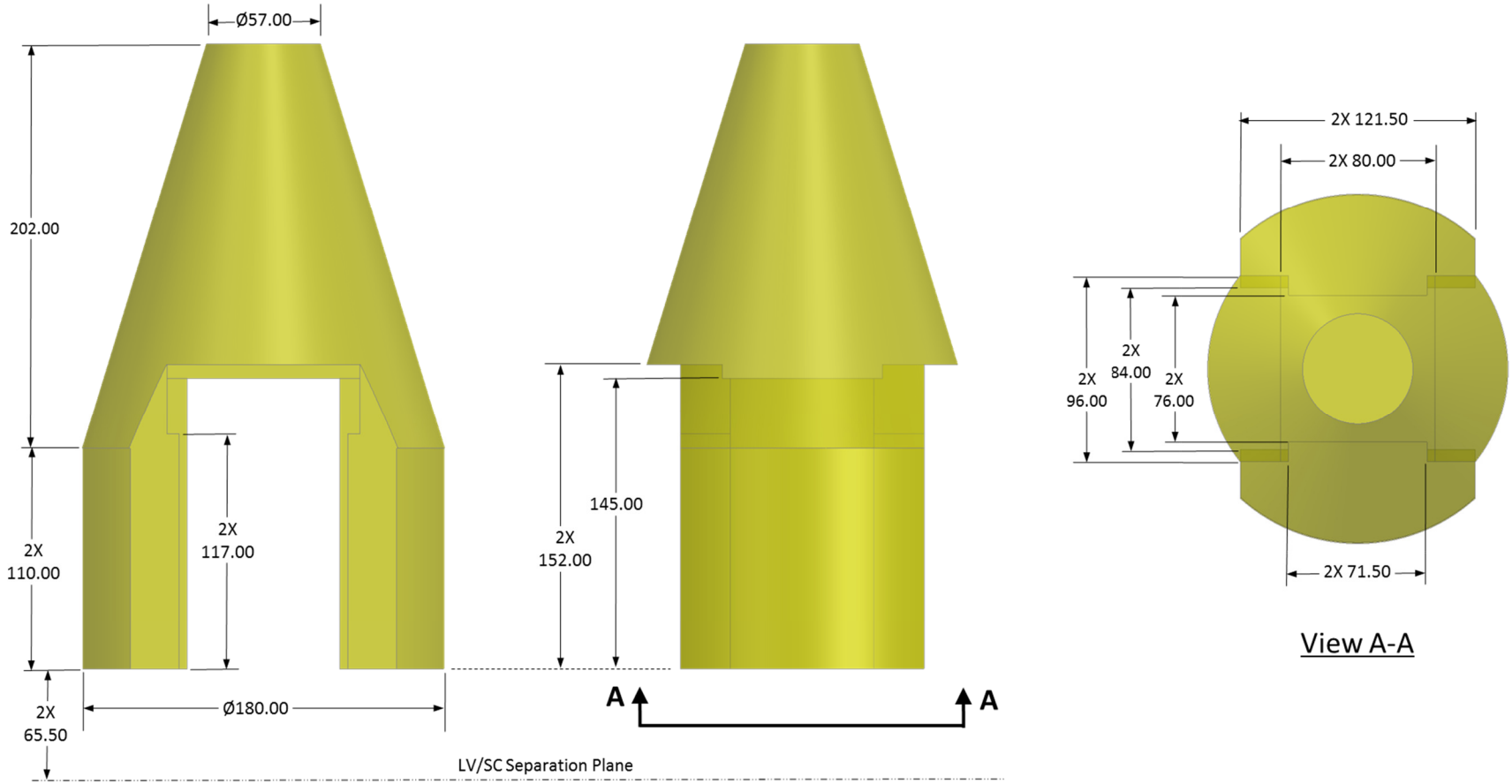

Figure 4. Volume available for payload mounting on LM 2100 with dimensions in **inches**